REMARKS

Claims 1 and 4-20 have been rejected under 35 USC 112, first paragraph. Claim 1 has been amended to remove the upper limit of 2.

Claims 1, 8-11, 18 and 20 have been rejected under 35 USC 103(a) as unpatentable over Matsuyama. The rejection is respectfully traversed.

Matsuyama fails to disclose completely filling the area between a mask and a refractive lens system with a liquid medium which has a refractive index greater than 1.2, as required by the claimed invention (as amended). Rather, Matsuyama provides three different media between a mask R and a lens system PL, L1, as shown in Figures 2, 8 and 17B and paragraphs 247-250 stating that air with a refractive index n1 of 1, a distortion correction plate G1 with a refractive index n2 of 1.50839, and air with a refractive index n1. Additionally, Matsuyama fails to disclose choosing the refractive index of the medium and the aperture of the refractive lens system such that beams representing deflection intensity maxima of first order, second order and third order are collected by the refractive lens system. To achieve this, the whole area between the mask R and the refractive lens system PL, L1 would have to be completely filled with a medium which, for example, has a relatively high refractive index of greater than 1.2. Matsuyama fails to disclose this feature. Moreover, to do so, the thin distortion correction plate G1 (Figures 2, 8 and 17B) would have to be provided with a thickness t more than 4 or 8 times as big as shown, and could not be arranged in the apparatus any longer. More specifically, in Matsuyama, the correction plate G1 merely has a thickness t of 1 mm (see, for example, paragraph 247, Figure 2 and 17B). Also, the distance D between the mask R and the lens system PL, L1 is 60.30364 mm when air with a refractive index n1 of 1 is used between the mask R and the correction plate G1, and the correction plate G1 and the lens system PL, L1 (see, for example, paragraph 246, Figure 2 and 17B). Finally, Matsuyama fails to disclose the use of phase shift mask, nor does it show completely filling the area between the mask and the refractive lens system with a liquid medium.

Claims 4, 5, 9 and 12-16 have been rejected under 35 USC 103(a) as unpatentable over Matsuyama in view of Fukuda. The rejection is respectfully traversed for the same reasons presented in the arguments above.

Claim 6, 7, 17 and 19 has been rejected under 35 USC 103(a) as unpatentable over Matsuyama in view of various combinations of Fukuda, Epple, Komoriya and Shiraishi. The rejections are respectfully traversed for the same reasons presented in the arguments above, and for the following reasons.

Shiraishi shows a phase shift reticle (col. 2, lns. 52-52). However, Shiraishi teaches away from the invention, since, as recited in the reference, the expert takes that the surface of a phase shift reticle should not get in contact with anything, i.e. even less with a liquid, as the surface of a phase shift mask in general is contaminated relatively easily. Hence, Shiraishi teaches away from completely filling the area between a phase shift mask and a refractive lens system with a liquid medium, as the surface of the phase shift mask would contact the liquid, thereby enhancing the danger of contamination. Additionally, Shiraishi fails to disclose attenuated phase shift masks. Attenuated phase shift masks can comprise, for example, a quartz layer, and an additional layer, e.g. an additional layer comprising molybdenum silicide (MoSi). Due to the MoSi, the surface of attenuated phase shift masks in general is even more easily contaminated, than the surface of the ordinary phase shift masks. Hence, there is no reason why the skilled artisan would completely fill the area between an attenuated phase shift mask and the refractive lens system with a liquid medium, as the surface of the phase shift mask would contact the liquid and cause contamination.

In view of the above, each of the presently pending claims in this application is believed to be in immediate condition for allowance. Accordingly, the Examiner is respectfully requested to withdraw the outstanding rejection of the claims and to pass this application to issue. If it is determined that a telephone conference would expedite the prosecution of this application, the Examiner is invited to telephone the undersigned at the number given below.

In the event the U.S. Patent and Trademark office determines that an extension and/or other relief is required, applicant petitions for any required relief including extensions of time and authorizes the Commissioner to charge the cost of such petitions and/or other fees due in connection with the filing of this document to Deposit Account No. 03-1952 referencing docket no. 543822001700.

Dated: September 22, 2006

Respectfully submitted,

By _____

Kevin R. Spivak
Registration No.: 43,148
Kevin R. Spivak
Registration No.: 43,148
MORRISON & FOERSTER LLP
1650 Tysons Blvd, Suite 300
McLean, Virginia 22102
(703) 760-7769